Managing PCB Impacted Sites Under the Virginia Voluntary Remediation Program

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Introduction

We will Discuss:

1. Introduction
2. PCB Fundamentals
3. Critical Questions if PCBs Are on Your Site
4. Management Strategies
5. Future Considerations
6. Take Away Messages

Introduction

- Context of this Discussion–
  - Historical Release (impacted soil, groundwater, non-porous surfaces)
  - Why is This Issue Relevant?
    - PCBs are Regulated under TSCA – VRP can only accept sites that have no regulatory jurisdiction
    - PCBs Require parallel management – their presence is not a deal killer

PCB Fundamentals

- What were they used for? Typically –
  as an insulating material in electric equipment because they are resistant to heat (and fluctuations in pH) – makes them very persistent in the environment

- Example Uses
  - Transformers, Capacitors, Scrap Recycling, Compressors, Hydraulic Fluids, Electric Engines (including Locomotives)
  - Also - surface coatings for carbonless copy paper; as plasticizers in sealants, caulking, synthetic resins, rubbers, paints, waxes, and asphalts; and as flame retardants in lubricating oils.

PCB Fundamentals

- PCBs cause cancer in animals and are probably carcinogenic in humans.
- Recent evidence suggests that PCBs might also have adverse reproductive, developmental, and endocrine effects.
- The manufacture of PCBs has been banned since 1977.
- The highest human exposures to these compounds occur via the consumption of contaminated fish and in certain occupational settings via contact with pre-1977 equipment.

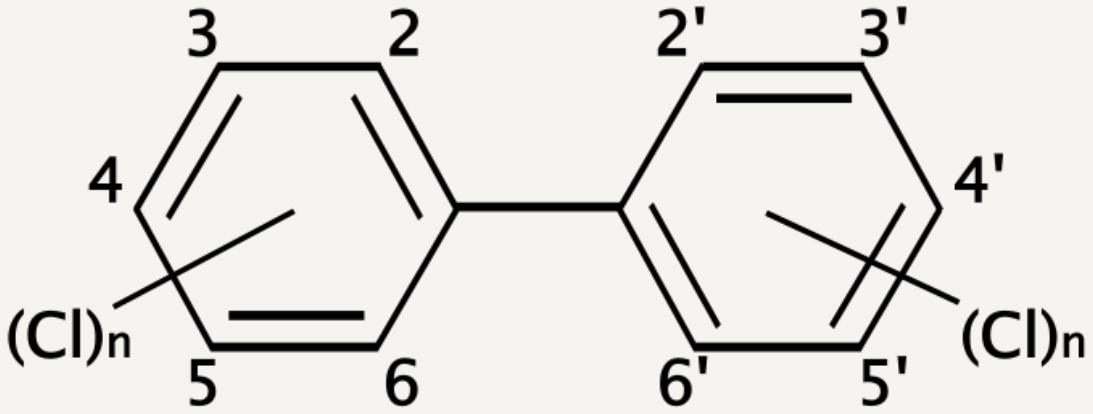
PCB Fundamentals

- Essentially Ubiquitous
- Bioaccumulation up food chain

- In the News
  - Hudson River - GE
  - Bloomington Indiana – Westinghouse

PCB Fundamentals

Polychlorinated Biphenyls



A collection of 209 different possible versions of this molecule that have multiple chlorine atoms connected in different combinations along the hexagonal segments of the structure–CONGENERS

PCB Fundamentals

- Arochlors and Congeners
  - **Aroclor** is actually a Trade Name that represented a mixture of PCB Congeners manufactured between 1930 and 1979
    - Two numbers: 12 refers to the number of Carbon Atoms, and the suffix refers to the percent of chlorine (1258 is 58% chlorine)
  - **Congeners** are one of the 209 permutations of chlorine atoms attached to the 6-sided carbon rings
    - Numbered 0 (biphenyl) through 209 (decachlorobiphenyl) – UIPAC Names and CAS Numbers

PCB Fundamentals

- Analytical Methods
  - **Method 8082** (GC)– **Parts per billion (µg/L/kg)**
    - Measures 7 Aroclors (and 19 specific congeners)
    - Until recently, chemical analysis **for total PCBs** or Aroclors has been compatible with environmental regulations, **thus, results from Method 8082** could be used directly to determine compliance.
    - Regulatory strategies evolve and regulatory criteria change. .....

PCB Fundamentals

- **Method 1668B** – November 2008 (HRGC/HRMS)
  - Detection Levels in **parts per quadrillion** (picograms per liter/kilogram)
    - 0.000000000001 gram
    - 3 grains of salt in 277 million gallons of water (85 acre lake 10 feet deep)
    - The area of one cowboy hat relative to the state of Texas
  - Controversial Method
  - Measures all 209 Congeners (Aroclors are blends)
  - Laboratory: Analytical Perspectives – Wilmington, NC

PCB Fundamentals

- The “Bible” for Brownfields PCB Cleanup
  - *Polychlorinated Biphenyls (PCB) Site Revitalization Guidance Under the Toxic Substance Control Act (TSCA), US EPA, November 2005*
  - *TSCA Regulation (40 CFR Part 761)*

PCBs on Your Site

- Major Questions

1. When were the PCBs Deposited - 761.50 (b)(3)(i)
   - Pre or Post **April 18, 1978** (sort of)
     - *"(i) Any person responsible for PCB waste at as-found concentrations ≥50 ppm that was …released into the environment prior **to April 18, 1978**, regardless of the concentration of the spill or release; or…released into the environment on or after April 18, 1978, but prior to **July 2, 1979**, where the concentration of the spill or release was ≥50 ppm but < 500 ppm,…."*

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PCBs on Your Site

- Major Questions (Page 3 of the "Bible")
  1. **How will the Contaminated property be used?**
  2. What is the type of waste material that is contaminated with PCBs?
  3. What are the appropriate cleanup levels?

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Management Strategies

- Limitations to these Strategies
  - Every Site is Unique
  - Acceptable degrees of risk and liability must be determined by the Owner
    - The VRP Certificate typically will not address PCBs
- **Seek *Qualified* Legal Counsel**

Management Strategies

- The Long Way Home
  - Demonstrate that PCBs were deposited prior to the April 18, 1978; prepare a legal review requesting TSCA to waive jurisdiction and forward it to US EPA for review.
  - Wait 2 plus Years for a response.
  - Receive a denial or a non-committal letter of agreement.
  - If “waived” conduct a **self implementing cleanup** – management of the waste still needs to comply with TSCA

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Management Strategies

- The Good Shepherd
  - Notify EPA and Implement a Fully Compliant Self Implementing Cleanup, and then move forward with the VRP
  - Follow 761.3
    - *(3) Notification and certification. (i)* ***At least 30 days prior to the date that the cleanup*** *of a site begins,…. notify, in writing, the EPA Regional Administrator, …..where the cleanup will be conducted.*

Management Strategies

- Kicking the Can
  - "Carve out" your PCB Impacts and deal with them separately through a self implementing cleanup ***or*** leave them in-situ based on Risk
    - VRP "site" is defined by a Professional Land Survey
    - Typically requires the vast majority of impacts to be in one relatively discrete area and at low levels
    - Can save time and money – A degree of Risk and Liability are involved

Management Strategies

- The Middle Way (or Rolling the Dice)
  1. Prepare a Legal Review Documenting pre-April 18, 1978 (or July 2, 1979) placement – put it in a vault.
  2. Conduct a Self Implementing Cleanup in accordance with TSCA without notification – keep great records – put that in a vault.
  3. Finalize cleanup of the site under the VRP.

An Eye to the Future

- Environmental Council of the States (ECOS) Resolution 10-10, August 30, 2010
  - Supports an Amendment to TSCA to provide for regulation and of the management of and disposal of PCB waste and residuals under existing appropriate provisions of RCRA and CERCLA
- TMDLs for PCBs may impact characterization and cleanup requirements
- PCBs are a Political Football – Regulations Will Likely Get Tighter Rather Than Looser

Take Away Messages

- PCBs on a VRP Site are Not a Deal Killer
- Information About Your Site is King
- Identify Your *Reuse* as Early as Possible
- Know Your Laboratory Analytical Implications
- Read Your "Bible" – *Revitalization Guidance*
- Seek *Qualified* Legal Counsel
- Seek *Qualified* Technical Expertise
- Determine Your Limits of Risk and Liability

An “eagle-logical” receptor?